The physiological side of the game is not lost sight of, and is dealt with by the author in three short chapters, while Part iv. is devoted to "lawn tennis encyclopædia," containing much miscellaneous information useful to players, including a bibliography of the literature on the subject, which, by the way, is very considerable.

The volume concludes with an account of the history and growth of the game of lacrosse, by William Harvey Maddren.

The very complete index adds considerably to the utility of this publication, which should form a welcome addition to any sportsman's library.

In the second of these volumes, which is the combined work of Messrs. G. Beldam and P. A. Vaile, we have another valuable contribution to the literature of lawn tennis. Mr. Beldam presents us with 229 of his action photographs, all of which are here beautifully reproduced. In his book on "Great Golfers" he showed how much could be learnt by closely studying action-photographs, and in the present volume on great lawn tennis players a similar attempt is rewarded with equal success in spite of the greater difficulties involved, since both player and ball are in rapid motion. The photographs here given are not casual snapshots, but taken specially to illustrate the positions occupied by players for particular strokes. Mr. Vaile, writes, so to speak, round these pictures, and in his breezy and straightforward style points out which in his estimation are the good or bad points. This author is of the opinion that the true science of the game is but dimly appreciated in this country, and it is his main endeavour throughout these pages to indicate in which direction progress can be made. The lawn tennis reader will find, therefore, much to think over in these pages, and particular attention is drawn to the first chapter, in which the racket, *per se*, and the methods of holding it are discussed. Mr. E. G. Meers contributes an interesting chapter on "Advanced Tactics of the Single Game," while "The Half-Volley" is treated by Mr. G. A. Caridia.

OUR BOOK SHELF.

New Streets: Laying Out and Making Up. By A. Tayler Allen. Pp. 175. (London: The Sanitary Publishing Company, Ltd.) 3*s.* net.

THIS is not the sort of book that anyone but a proofreader could read straight through, not even a reviewer or a surveyor or architect, for whom especially it is written. This statement is not made by way of disparagement, quite the reverse, and the author would be the first to agree to it.

In these days, with a multiplicity of petty and of local bye-laws and regulations, all put together primarily and ostensibly to prevent scamping of different kinds, but often, and the more so the more petty the authority, used as weapons to compel public spirited parties to go to unnecessary and extravagant expense so that the members of the petty body or their friends may be the more prosperous, it is above all essential that the surveyor or architect or engineer or even private individual, who has occasion to make a new street or a cottage or a side-walk or a retrospective drain should act warily, and have before him the several acts and bye-laws that regulate or hamper, as the case may be, the particular work he has in hand. The author, judging by this, and by the titles of his previous works, seems to be a good Samaritan and to take pleasure in pointing out the numerous pitfalls that must be avoided by the man who would, if possible, live at peace. The present book is largely filled with a recitation of laws and of district council requirements which no one would wish to read unless under compulsion. The latter part contains examples of work in very full detail and with illustrations.

However, the author has not, as might have been expected, lost all interest in the progress of his subject in wrestling with these dismal details. For instance, on p. 2 he says:—

"The author is one of a few surveyors who believe that all wide carriageways (where traffic is considerable), should have the channel in the centre instead of at the sides, thus obviating the tendency of vehicles to slide down the haunches of the road towards the kerb. The gradient to the centre channel from the kerb need not exceed 1 in 40."

Whatever advantages or the reverse there may be in this plan, spectators on the pavement would no doubt prefer to see this sliding in the direction desired by the author, especially if the vehicles happened to be quick motor-cars going in opposite directions.

The author is to be complimented on performing a tedious and uninteresting task for the general good.

C. V. B.

A Popular Guide to the Heavens. By Sir Robert S. Ball, LL.D., F.R.S. Pp. xii+96; 83 plates. (London: George Philip and Son, Ltd., 1905.) Price 15*s.* net.

THIS is a new edition of the "Atlas of Astronomy," by the same author, which appeared in 1892, the revision having extended even to the title of the book. As before, star maps and pictures of the heavenly bodies are the chief feature, but in many cases drawings have been replaced by admirable reproductions of some of the finest celestial photographs at present available. The star charts, comprising twelve maps indicating the aspect of the heavens in the different months, and twenty others showing much greater detail, are excellent in every respect, and will meet the needs of those making a first acquaintance with the stars as well as of those who may wish to observe interesting objects with telescopes of moderate aperture. A valuable feature in connection with the maps is an index to the planets, whereby the positions of these bodies in each month during the next fifty years may be approximately ascertained. A very complete guide to observations of the moon is also provided by the maps and catalogues of lunar formations. So far, the book justifies its title, but the remaining parts give the impression of a scrap-book with pages still remaining to be filled, and pages which would have been filled differently by different owners. The sun, for example, is inadequately represented; the only photograph of a sun-spot which is given conveys no indication of the dimensions of the spot, and there are no illustrations of faculæ or photographs in monochromatic light. A more serious omission, in a book which is styled a "guide," is the absence of all reference to the modes of observing the sun, although careful drawings of the paths of spots at different times of the year are included. Again, there is an elaborate chart of the planet Mars, but nothing to show what the planet looks like in an ordinary telescope.

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The text amounts to little more than a description of the plates and is too scrappy to give a connected view of the subject. The book, however, is well produced, and will be valued for its excellent star maps and examples of celestial portraiture.

Denkmäler mittelalterlicher Meteorologie. No. 15 (Schlussheft). Neudrucke von Schriften und Karten über Meteorologie und Erdmagnetismus herausgegeben von Prof. Dr. G. Hellmann. Pp. lviii+269. (Berlin: Asher and Co., 1904.)

This is the final volume of a valuable series of publications which we owe to the energy of Prof. Hellmann. In them we have had brought before us the more interesting abstracts and reprints of early works dealing with meteorology and terrestrial magnetism. Prof. Hellmann has thus made available to those interested in these subjects, the records of ancient times, which to many would have remained unread and possibly unknown.

In the present volume, which deals more especially with meteorology, we have presented to us a set of twenty-six separate parts ranging from the seventh to the fourteenth century. Many others have been taken from printed works, but some of them, as we are told in the preface, are here published for the first time.

Further, many of these old texts have here been translated into German so that those who are not familiar with old Saxon, old English, old Norwegian, or Arabic will still be able to gain a good insight into the ideas of the Middle Ages.

In the introduction to this volume Prof. Hellmann gives a brief sketch of the character of meteorology at these periods, and adds a short and interesting summary of biographical facts relating to the writers of the texts to which reference is here made. An appendix contains additions and corrections to the earlier numbers.

For the labour involved in bringing together and preparing this collection of old texts a large debt of gratitude is due to Prof. Hellmann, and it is hoped that from time to time, when further ancient writings are brought to light, he will render them in like manner so conveniently available.

The Birds of Calcutta. By F. Finn. Second edition. Pp. vi+136. (Calcutta: Thacker, Spink, and Co; London: Thacker and Co., 1904.)

The fact of a work reaching a second edition may generally be taken as an indication that it has received the seal of public approval, and that it accordingly needs no commendation from us. In the present instance, a ready reception would seem to be assured to the new edition, since many additions and improvements have been made. The most important addition is undoubtedly the series of life-like cuts of Indian birds, which adds very largely to the interest of the little volume; but it is also satisfactory to find that the arrangement and nomenclature have been revised so as to bring the work into harmony with the volumes on birds in the "Fauna of British India," to which it may serve in some degree as an introduction. Mr. Finn has a vivacious, if sometimes flippant, style, which removes his works from the "dry-as-dust" category; but in some cases, as in the application of the term "disreputable" to the babbler, we venture to think some of his epithets might be better selected. To a former resident the omission of the adjutant stork from the list of Calcutta birds seems strange, but it appears that for many years these weird birds have ceased to visit the city of palaces. R. L.

Toning Bromide Prints. "Photography" Bookshelf Series, No. 16. By R. E. Blake Smith. Pp. xv+104. (London: Iliffe and Sons, Ltd., 1904.) Price 1*s.* net.

Instead of producing a black and white bromide print it is often desirable to change the normal tone to suit the subject photographed. There are many methods by which this change of tints can be obtained, and these pages are devoted to describing the various processes that are available. The material on which this book is based first appeared in a series of articles in *Photography,* but in the present handy form it will be found more convenient for workers. The author gives a good detailed account of each case, and discusses the probable effect of the different processes on the permanence of the finished picture. Workers with bromide papers will find this book of considerable service.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of Nature. *No notice is taken of anonymous communications.]*

Charge on the α Particles of Polonium and Radium.

With reference to the interesting letter on this subject by Prof. Rutherford in last week's Nature, I should like to point out that in my paper "On the positive electrification of α rays and the emission of slowly moving kathode rays by radio-active substances" (*Proc.* Camb. Phil. Soc., xiii., p. 49) I have described experiments which demonstrate the communication of a positive charge of electricity to bodies struck by α rays from polonium or radium. I had considerable difficulty in disentangling this positive charge from the copious streams of slowly moving negatively electrified corpuscles which I found were given out by these substances, and the experiments in which I finally succeeded in doing this were not completed until a few days after the reading of the paper on November 14, and are not referred to in the abstract quoted by Prof. Rutherford. A description of them will be found in the paper which has lately been published. I may take this opportunity of saying that I have recently found that uranium also gives out slowly moving corpuscles, so that this effect seems a general property of radio-active substances. The velocity of these corpuscles is very small compared with that of the β rays, and is more nearly of the order of the velocity of the corpuscles emitted by metals when exposed to light. J. J. Thomson.

Cavendish Laboratory, Cambridge, March 4.

A conversation I had with Prof. Bragg, of the Adelaide University, in passing through Adelaide last summer suggested some thoughts in regard to the nature of the α rays which may be of interest in view of Prof. Rutherford's letter in last week's Nature. Prof. Rutherford announces that he has at last succeeded in detecting the positive charge carried by the α rays of radium by using a magnetic field to deflect and remove the slow-moving electrons present with the α particles. He says, "I think these experiments undoubtedly show that the α particles do carry a positive charge, and that the previous failures to detect this charge were due to the masking action of the large number of slow-moving electrons emitted from the plates." These results, while they afford a welcome confirmation of the conclusions drawn from the evidence of the magnetic and electric deviation suffered by the α rays, do not, to my mind, finally settle the question.

It must be admitted that the α particles in ordinary circumstances do carry a positive charge. Certain evidence, however, seems to point to the conclusion that the α particle at the moment of its expulsion from the parent atom is uncharged, and that it derives its positive charge from secondary causes, independently of, and subsequent to, the expulsion process. To devise a crucial experiment which

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